Image

Attorney's Docket No.: 16163-021002 / GI5452

1631

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Robert Powers et al. Art Unit : 1631
Serial No. : 09/942,055 Examiner : Channing S. Mahatan
Filed : August 29, 2001
Title : STRUCTURE OF A FREE REGULATOR OF G-PROTEIN SIGNALING (RGS4) AND METHODS FOR IDENTIFYING AGONISTS AND ANTAGONIST USING SAME

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Applicant submits the references listed on the attached form PTO-1449.

This statement is being filed after a first Office action on the merits, but before receipt of a final Office action or a Notice of Allowance. A check for $180 in payment of the late submission fee of §1.17(p) is enclosed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 4/21/04

Sean P. Daley
Reg. No. 40,978

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

20837618.doc

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

4-21-04
Date of Deposit

Patricia Smith
Signature

Patricia Smith
Typed or Printed Name of Person Signing Certificate

04/27/2004 MBERHE 00000157 09942055
01 FC:1806 180.00 OP

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 16163-021002	Application No. 09/942,055
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Robert Powers et al.	
		Filing Date August 29, 2001	Group Art Unit 1631

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	AB							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	AC	Bax et al. "Measurement of Homo-and Heteronuclear J Couplings from Quantitative J Correlation." Methods in Enzymol 239:79-105, 1994.
	AD	Berghuis et al. "Structure of the GDP-Pi complex of Gly203→Ala$G_{i\alpha1}$: a mimic of the ternary product complet of Gα-catalyzed GTP hyroylsis." Structure 4:1277-1290, 1996.
	AE	Berman et al. :The GTPase-activating Protein RGS4 Stabilizes the Transition State for Nucleotide Hydrolysis." J. Biol. Chem 271:27209-27212, 1996.
	AF	Chen et al. "RGS-r, a retinal specific RGS protein, binds an intermediate conformation of transducin and enhances recycling." Proc. Natl. Acad. Sci. USA 93:12885-12889, 1996.
	AG	Clore et al. "Three-Dimensional Structure of Interleukin 8 in Solution." Biochemistry 29:1689-1696, 1990.
	AH	Coleman et al. "Structures of Active Conformations of $G_{i\alpha1}$ and the Mechanism of GTP Hydrolysis." Science 265:1405-1412, 1994.
	AI	de Alba et al. "Solution Structure of Human GAIP (Gα Interacting Protein): A Regulator of G Protein Signaling." J. Mol. Bio. 291:927-939, 1999.
	AJ	DeVries et al. "RGS proteins: more than just GAPs for heterotrimeric G Proteins." Trends Cell Biol. 9:138-144, 1999.
	AK	DeVries et al. "GAIP, a protein that specifically interacts with the trimeric G protein $G\alpha_{13}$, in a member of a protein family with highly conserved core domain." Proc. Natl. Acad. Sci USA 92:11916-11920, 1995.
	AL	Dohlman et al. "RGS Proteins and Signaling by Heterotrimeric G Proteins." J. Biol Chem. 272:3871-3874, 1997.
	AM	Druey et al. "Inhibition of regulator of G protein signaling function by two mutant RGS4 proteins." Proc. Natl. Acad. Sci. USA 94:24:12851-12856, 1997.
	AN	Druey et al. "Inhibition of G-protein-mediated MAP kinase activation by a new mammalian gene family." Nature 379:742-746, 1996.
	AO	Farfel et al. "The Expanding Spectrum of G Protein Diseases." N. Eng. J. Med. 340:1012-1020, 1996.
	AP	Garrett et al. "The Impact of Direct Refinement against Three-Bond HN-$C^{\alpha}H$ coupling Constants on Protein Structure Determination by NMR." J. Magn. Reson. Serv. B 104:99-103, 1994.

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 16163-021002	Application No. 09/942,055
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR 1.98(b))		Applicant Robert Powers et al.	
		Filing Date August 29, 2001	Group Art Unit 1631

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	AQ	Garrett et al. "A Common Sense Approach to Peak Picking in Two-, Three-, and Four-Dimensional Spectra Using Automatic Computer Analysis of Contour Diagrams." J. Magn Reso. 95:214-220, 1991.
	AR	Gold et al. "Regulators of G-Protein Signaling (RGS) Proteins: Region-Specific Expression of Nine Subtypes in Rat Brain." J. Neurosci. 17:8024-8037, 1997.
	AS	Ikura et al. "Three-Dimensional NOESY-HMQC Spectroscopy of a ^{13}C-Labeled Protein." J. Magn Reson. 86:204-209, 1990.
	AT	Kozasa et al. "p115 RhoGEF, a GTPase, Activating Protein for$G\alpha_{12}$ and G α_{13}." Science 280:2109-2112, 1998.
	AU	Kraulis et al. "Determination of the Three-Dimensional Solution Structure of the C-Terminal Domain of Cellobiohydrolase I from *Trichoderma reesei*." A Study Using Nuclear Magnetic Resonance and Hybrid Distance Geometry-Dynamical Simulated Annealing." Biochemistry 28:7241-7257, 1989.
	AV	Kuszewski et al. "The Impact of Direct Refinement against $^{13}C^{\alpha}$ and $^{13}C^{\beta}$ Chemical Shifts on Protein Structure Determination by NMR." J. Magn. Reson. Ser. B 106:92-96, 1995.
	AW	Mixon et al. "Tertiary and Quaternary Structural Changes in $G_{i\alpha 1}$ Induced by GTP Hydrolysis." Science 270:954-960, 1995.
	AX	Moy et al. "NMR Solution Structure of the Catalytic Fragment of Human Fibroblast Collagenase Complexed with a Sulfonamide Derivative of a Thydroxamic Acid Compound.' Biochemestry 38:22:7085-7096, 1996.
	AY	Moy et al. "Letter to the Editor: ^{1}H, ^{15}N, ^{13}C, and ^{13}CO assignments and secondary structure determination of RGS4." J. Biomol NMR 15:339-340, 1999.
	AZ	Nilges et al. "Determination of three-dimensional structures of proteins by simulated annealing with interproton distance restraints. Application to crambin, potato carboxypeptidase inhibitor and barley serine proteinase inhibitor 2." Protein Eng 2:27-38, 1988.
	AAA	Sprang, S.R. "G Protein Mechanisms: Insights from Structural Analysis." Annu. Rev. Biochem 66:639-678, 1997.
	ABB	Srinivasa et al. "Mechanism of RGS4, a GTPase-activating Protein for G Protein α Subunits." J. Biol. Chem. 273:1529-1533, 1998.
	ACC	Tesmer et al. "Structure of RGS4 Bound to AlF_4-Activated $G_{i\alpha 1}$: Stabilization of the Transition State for GTP Hyrolysis." Cell 89:251-261, 1997.
	ADD	Vuister et al. "An Empirical Correlation between $^{1}J_{C\alpha H\alpha}$ and Protein Backbone Conformation." J. Am. Chem. Soc. 114:9674-9675, 1992.
	AEE	Wang et al. "RGSZ1, a G_z-selective RGS Protein in Brain." J. Biol. Chem. 273:26014-26025, 1998.
	AFF	Watson et al. "RGS family members: GTPase-activating proteins for heterotrimeric G-protein α-subunits." Nature 383:172-175, 1996.
	AGG	Zheng et al. "Divergence of RGS proteins: evidence for the existence of six mammalian RGS subfamilies." TIBS 24:411-414, 1999.

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.